Editorial

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It is a great privilege and a real pleasure to assume the role of Editor-in-Chief of the International Journal *MECCANICA*, starting from the first issue of the year 2012. I feel sincerely in debt of the Italian Association of Theoretical and Applied Mechanics (AIMETA), the Publisher of the journal together with Springer, for the relevant opportunity provided to me, as well as of the AIMETA Council and the President, Professor Carlo Cinquini.

I am also grateful to the previous Editor, Professor Vincenzo Parenti Castelli, and his Associate Editors, for the good and hard work they have done, sensibly increasing the number of the published papers as well as the impact factor of the journal.

In our 21st Century technological world, where Electronics has invaded all the fields of our activities, it is frequent to forget that also Mechanics still maintains an important position as regards human activities and natural phenomena: from industrial and agricultural processes to environmental disasters, from the machine mechanisms to the dynamics and stability of large structures, from nanotechnology to astronautics and cosmology. Globalization is present also in Science today and many advanced and cutting-edge research investigations are developed where Mechanics

is crucial and interdisciplinarily connected with the other scientific areas.

Some important examples of such connections and interdisciplinary relations are even present within Mechanics itself: Solids and Fluids not only have in common some fundamental and already settled continuum mechanics equations, but they even share still open problems as those regarding field singularities (in stresses and velocities, respectively), scaling of energy dissipation phenomena (fracture and turbulence, respectively), energy emissions from the same phenomena.

The relationships and interactions between Mechanics and Physics have been well founded since decades. It is easy to think about bi-phasic fluids (Thermodynamics), piezoelectric materials and magnetofluidodynamics (Electromagnetism), and dislocation motion in crystals (Condensed Matter Physics).

The new challenges nowadays, and may be more and more in the future, are represented by the interactions with and the related preliminary studies in Chemistry, Biology, and Nuclear Physics. Common features of all these three developing fields are the mechanical forces or pressures which have been discovered to be the cause producing, respectively, chemical reactions (Mechanochemistry), biological signal transmissions (Cellular Mechanotransduction), and low energy nuclear reactions (Piezonuclear Phenomena).

I am delighted to invite all those who are interested in such a complex and challenging debate to send their ideas and contributions to *MECCANICA*.

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